



1948

CDC BULLETIN

CDC INVESTIGATES RABIES



Robes
of Beautiful
1948

Doctors Hear
Virus Theory

GULF'S REPLY
TO EXCESS PHOSPHOROUS

Counties

Secretary to Tell
On Radio

CONTEST

AGREEMENT

CDC BULLETIN

JANUARY - FEBRUARY - MARCH 1948

COMMUNICABLE DISEASE CENTER

U. S. PUBLIC HEALTH SERVICE

FEDERAL SECURITY AGENCY

Atlanta, Georgia

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Material in this bulletin is not for publication.

CDC

RABIES CONTROL STUDIES



Ernest S. Tierkel

Rabies control studies are receiving special emphasis on the program of the Veterinary Division recently transferred to CDC. (CDC Bulletin, Oct., Nov., Dec. 1947, page 31.) Work in the rabies laboratory is designed to make a critical evaluation of laboratory methods used in the diagnosis of rabies. Experiments are being conducted on the efficiency, duration, and dosage of all types of canine rabies vaccines. Studies are being made in the field on methods of immunization, other methods of control, reporting of the disease and statistical evaluation. Efforts are made to disseminate educational material to professional and non-professional groups.

Rabies is one of the important diseases of animals that can be transmitted to

man. The number of reported cases has increased alarmingly in the last several years. Work in the rabies laboratory is directed toward ultimate eradication of rabies from the United States.

STUDIES ON METHODS OF LABORATORY DIAGNOSIS

Adequate diagnostic methods are a basic prerequisite to public health attack against any disease. Rabies may be demonstrated in the laboratory by observing Negri bodies (virus inclusion bodies) in brain tissue or by producing the disease in experimental animals by injecting infected material. Efforts are being made to evaluate procedures in common use in various laboratories.

This article is abridged from a paper entitled "Inauguration of Rabies Control Studies by the U. S. Public Health Service" presented before the Section on Sanitary Science of the American Veterinary Medical Association at the 84th annual convention, August 18 - 21, 1947, at Cincinnati, Ohio.

Dr. Tierkel, S. A. Scientist (R), is officer in charge of the rabies laboratory operating in the Control Demonstrations Branch of the Veterinary Division. Headquarters for rabies work is at CDC Virus Research Laboratory, Montgomery, Alabama.

DIRECT MICROSCOPICAL EXAMINATION OF SUSPECTED MATERIAL

Three methods are recognized for preparation of brain tissue to be stained and examined microscopically, 1) the touch-impression method, 2) the rolling technique, 3) the spread-smear method.

In the touch-impression method, small cut sections of Ammon's horn, cerebral cortex, and cerebellum are placed on clean blotting paper. The slide is touched against the cut surface of the section and pressed gently downward with just enough pressure to create a slight spread of the exposed surface of the tissue against the slide. Depending on size of the section, three to four impressions can be made on one slide. Preliminary observations indicated that this method is satisfactory. A maximum amount of nerve tissue is concentrated in a small area and the nerve cell and glial structure are preserved. Since most of the histological structure is intact, the chance of finding Negri bodies is good. This technique is preferred for research work where detailed observations must be made.

The rolling technique consists of cutting a piece of brain tissue about the size of a fresh garden pea and rolling it gently over the entire surface of one side of the slide with a toothpick or wooden applicator. Here there is very little damage to nerve cell structure and a wide area of the slide is covered. The concentration of tissue material is rather sparse, however, and there is greater possibility of missing Negri bodies when only few are present.

When the spread-smear technique is employed a small section of brain tissue is placed on one end of the slide and the section of tissue is crushed with another slide. Then the tissue is drawn across the length of the first slide with the slide used for crushing. This results in a fairly homogeneous spread of tissue in a thin film, covering about three-quarters of the slide. There is sometimes a copious concentration of tissue if the section used is too large. In this preparation, an extensive area must be examined and there is often damage to the neurone and glial

structure. In spite of these objections, this is the method of choice in most diagnostic laboratories.

Various stains are being used in attempting to find the best for differentiating Negri bodies. Stains to be tested or proposed for evaluation include Sellers' differential stain, Johnson's modification of Sellers', Williams' basic fuchsin-methylene blue, Mann's methyl blue-eosin, Mallory's tissue stain, Wolbach's modification of Giemsa, eosin-methylene blue, hematoxylin and eosin, and others. Tissue fixatives include air dried fixation, methyl alcohol, acetic-Zenker's solution, and formalin.

Only a few staining techniques have been tried thus far. Of those tested, Sellers' stain is the most rapid and easily handled. Methyl alcohol is the stain solvent. This enables fixing and staining to be done in one operation. With Sellers' stain Negri bodies are observed in a magenta or heliotrope to pink-red color with dark blue to black basophilic inner granules. All parts of the nerve cell stain blue and the glial structure and interstitial tissue stain pink.

DIAGNOSIS OF RABIES BY ANIMAL INOCULATION

Negri bodies cannot always be demonstrated in brains of animals dying of rabies. Hence it is important to do animal inoculations with Negri-negative brains. In several laboratories it has been found that 10 to 12 percent of brains shown to be positive by mouse inoculation were missed by direct smear microscopical examination.

It is strongly recommended that laboratories furnishing rabies diagnostic services be equipped to do animal inoculations of Negri-negative brain tissues. The procedure is simple and inexpensive. The animal of choice is the white mouse. These animals are inexpensive and easily handled. Intracerebral inoculation of a suspension of infected brain material will produce typical and constant symptoms after an incubation period varying from five to eleven days. Production of Negri bodies is consistent.

The test is performed by injecting 0.03 ml. of a saline suspension of emulsified

1 BRAIN FROM A SUSPECTED RABID ANIMAL.

3

2 THE HEMISPHERE IS OPENED WITH A LONGITUDINAL CUT, EXPOSING AMMON'S HORN.

A LATERAL SECTION IS CUT FROM AMMON'S HORN, PLACED ON SLIDE.

3

THE TISSUE IS SPREAD WITH ANOTHER SLIDE.

4

5 AFTER DRYING, THE FILM IS STAINED BY IMMERSING MOMENTARILY IN SELLERS' STAIN.

6 EXCESS STAIN IS REMOVED BY WASHING SLIDE IN RUNNING WATER. WHEN DRY, THE FILM IS READY FOR MICROSCOPICAL EXAMINATION FOR NEGRI BODIES.

SMEAR SPREAD TECHNIQUE FOR PREPARING FILMS OF DOG BRAINS





Rabies is perpetuated by transmission from dog to dog. Man is an accidental host.

pooled material of brain tissue from Ammon's horn, cerebral cortex, and cerebellum into each of three white mice. Daily observations of mice are made for 14 days and symptoms recorded. Microscopical examination should be made for Negri bodies on each mouse that dies. If there are no deaths at the end of 14 days, the mice should be sacrificed and an attempt made to demonstrate Negri bodies in the brains.

Techniques of the test are illustrated in the "Idea Exchange" of this issue on pages 30 and 31.

Experiments are being conducted in an effort to find a bactericidal agent, which will not affect rabies virus, against contaminating bacteria in decomposed brains. This is necessary since mouse inoculation tests cannot be performed with contaminated material until bacteria are inactivated.

OTHER DIAGNOSTIC METHODS

Efforts to devise other means of diagnosing rabies have proved unsatisfactory. The histopathological picture of rabies infections, such as inflammatory and degenerative changes in the brain and nervous tissue, is not sufficiently specific to be of practical diagnostic value. Serologic tests have also been unsatisfactory, al-

though specific complement-fixing antibodies have been demonstrated in rabid animals. Apparently they are not present in sufficient quantities for the application of a dependable complement-fixation test.

STUDIES ON CANINE RABIES VACCINE

Studies are underway to investigate the potency of various prophylactic canine rabies vaccines. Specific objectives are (1) to determine the duration of immunity conferred by the available commercial phenolized vaccines, (2) to refine the system of dosage with these vaccines in order to obtain optimum immunity response, (3) to test the safety and relative antigenicity of newly developed live-virus vaccines, such as egg embryo vaccines, and (4) to test the efficacy of new experimental killed-virus vaccines in which the virus has been inactivated with chemical substances or ultra violet irradiation.

In connection with these studies, different strains of fixed and street virus must be standardized to determine their value for use as challenge viruses and their adaptability for use as vaccines following treatment.

VIRUS-SERUM NEUTRALIZATION TESTS

One of the most important aids in vaccine potency experiments is the serum-neutralization test. In this test a standard fixed virus of known infectivity titre is mixed with the serum of an animal. After varying periods of incubation and refrigeration the mixture is inoculated into mice. In this way alteration in infectivity of the virus caused by presence of virus neutralizing substance in the serum is determined. Since the titre, dilution, and dosage of the virus is known, the minimum lethal dose (MLD) of the virus can be calculated. For example, if a given mixture of 100 minimum lethal doses of rabies virus and unknown serum is inoculated intracerebrally into four mice and a rabies mortality of four deaths out of four mice results, it may be assumed that the serum tested shows no evidence of presence of virus-neutralizing substance against 100 MLDs of rabies virus. If a similar test is made using the serum of another animal, and there is no mortality in the four mice, it is evident that a sufficient amount of neutralizing antibodies was present in the serum of this animal to offer complete protection against 100 MLDs of fixed rabies virus. Intermediate results are interpreted as gradations in the amount of virus neutralizing substance present in the blood of the animal tested.

The neutralization test was of inestimable value in the selection of animals for vaccine potency experiments. It was necessary to use animals which were comparable with regard to susceptibility to infection and immunity response to vaccination. Animals were first selected which were similar with regard to their neutralizing antibody reactions; they were then subgrouped to be as comparable as possible with regard to age.

Effects of various types of experimental vaccines in producing virus neutralizing substance in the sera of the dogs is being studied. Neutralization tests are being conducted at 20-day intervals after vaccination before the challenge inoculation of rabies virus is made. Preliminary results

indicate that neutralizing antibodies, against 100 MLDs of virus, were present in all of the dogs 20 days after vaccination. Ninety-six percent were completely protected, 2 percent were protected significantly but not completely, and only 2 percent were protected but slightly. Eighty-two percent of blood specimens obtained before vaccination contained little or no protecting neutralizing substance. Subsequent studies will be designed to compare various vaccines as to quantity and duration of neutralizing antibodies.

It has not been proved definitely that presence of rabies virus neutralizing substance in the blood-serum is an indication of true immunity against infection. The virus-serum neutralization test is, however, the most satisfactory means of determining relative susceptibility to infection and of measuring immune response to vaccination.

EPIDEMIOLOGIC STUDIES

Epidemiologic studies on rabies incidence and control during 1946 are being conducted in Alabama, with the cooperation of the Alabama State Department of Health. The items being considered are:

1. Number of animal rabies cases reported
2. Number of human rabies cases reported
3. Number of canine prophylactic vaccinations given
4. Number of human vaccine treatments administered
5. Number of stray dogs impounded
6. Number of stray dogs destroyed
7. Facilities for collecting and impounding of strays
8. Estimated dog population of county
9. Facilities for laboratory diagnosis of rabies

When accumulation of information is completed, a critical evaluation of existing control programs will be made. It is hoped that intensive study of present programs will provide information upon which recommendations for improvement can be made. When plans for operation are



Local veterinarians can supply effective vaccine against canine rabies.

interested, influential, and respected citizens of the community. The ideal Rabies Advisory Committee includes the chairman of the local board of health, a veterinarian, a representative of the local kennel and sportsman's clubs, one or more dog owners, a local judge, and officers of various civic organizations. A committee of this type should hold meetings, gather latest information on rabies control, formulate educational campaigns, and disseminate the result of their findings to the public. By the prestige of the members, confidence of the citizens of the community is obtained.

TRAINING AID

To assist in meeting the need for educational material on rabies control an educational filmstrip on this subject has been produced in cooperation with the Production Division of CDC. The film has been reviewed in this Bulletin. (CDC Bulletin - July, August, September 1947, p. 34-35).

NATIONAL RABIES PROGRAMS

PHILADELPHIA CONFERENCE ON RABIES

Because of its nation-wide importance, a conference on rabies was held at Philadelphia on April 9, 1947. The purpose of the conference was to bring together for

discussion on a country-wide basis, all national agencies concerned with the problem. Agencies represented were the American Medical Association, American Public Health Association, American Veterinary Medical Association, American Animal Hospital Association, Bureau of Animal Industry of the U. S. Department of Agriculture, and U. S. Public Health Service. Three major points were emphasized by the conference:

(1) Rabies in the United States is of sufficient national importance to make desirable the participation of the federal government in coordinating efforts of states in control programs.

(2) Rabies in animals should be made a reportable disease. Information obtained should be analyzed properly and distributed to all concerned.

(3) In order that control be facilitated, attention must be directed toward the following:

1) Provision of adequate diagnostic facilities.

2) Control of animals capable of transmitting rabies.

3) Mass immunization of susceptible animals, particularly dogs.

Recommendations of the conference were submitted for appropriate action to the official representatives of the agencies in attendance.

PROPOSAL FOR A FEDERAL RABIES CONTROL COMMISSION

Many communities have very effective rabies control programs; in many instances neighboring communities have weak programs. Often epidemics recur in rabies-free areas. In some cases, states operate a type of control program which conflicts with that in neighboring states. Since rabies cannot be confined by political boundaries, effective control can be done only on an interstate basis with a properly authorized national agency assuming responsibility of coordination.

It is hoped that the U.S.P.H.S. can aid in formulating a Federal Rabies Control Commission, composed of representatives



Dog owners cooperate "willingly" with dog vaccination campaigns.

of the Service of the U. S. Bureau of Animal Industry, and of the U. S. Fish and Wildlife Service. Such a commission would insure uniform practices of rabies control based on proven scientific information. The commission would assist specifically in several important ways:

(1) In the distribution of the latest accepted diagnostic procedures to the States.

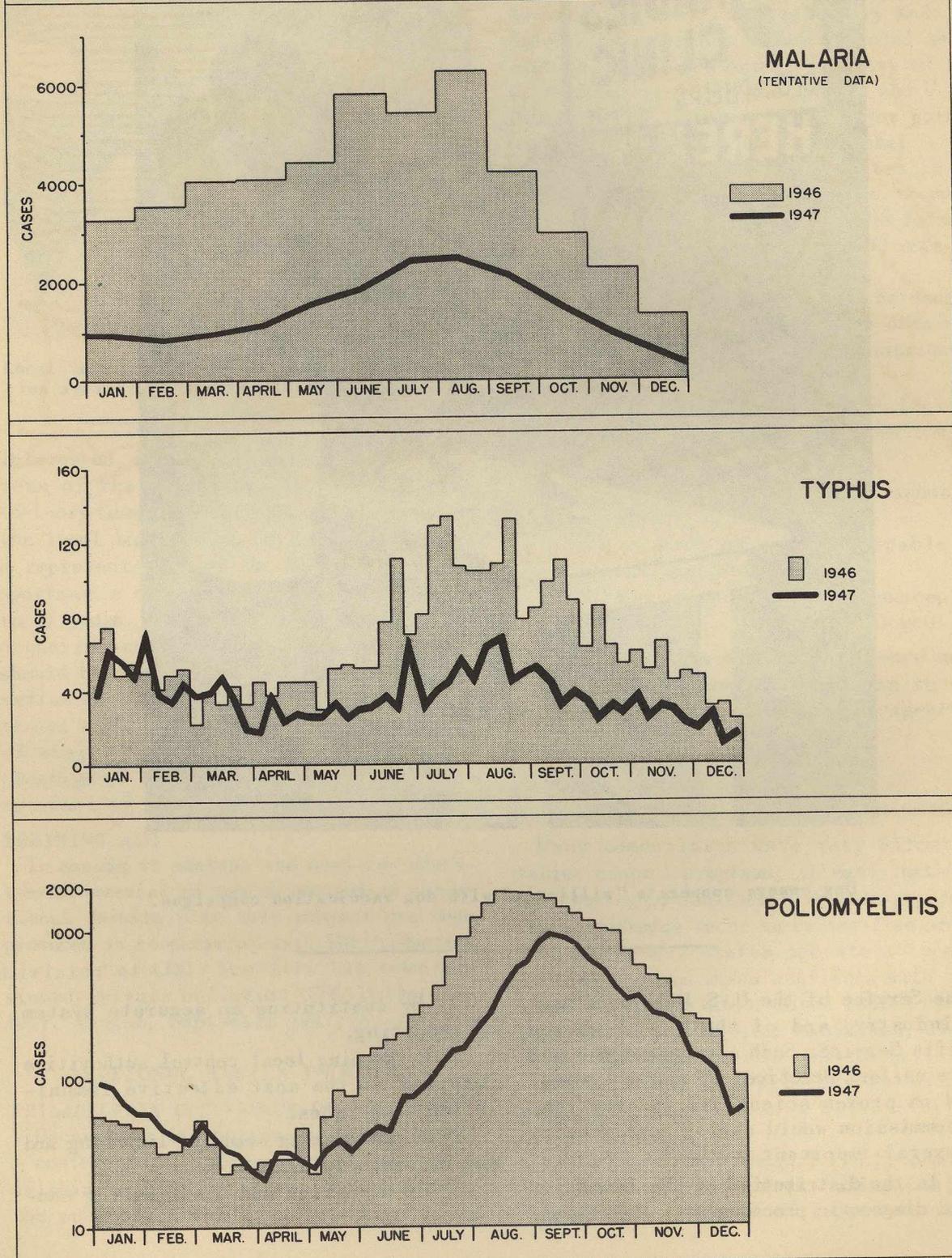
(2) By instituting an accurate system of reporting.

(3) By keeping local control authorities informed of the most effective immunization techniques.

(4) By formulating standard licensing and dog control ordinances.

(5) By preparing and distributing educational material.

MORBIDITY TOTALS FOR THE UNITED STATES * MALARIA, TYPHUS, POLIOMYELITIS



USPHS - CDC ATLANTA, GEORGIA * FROM PUBLIC HEALTH REPORTS

DIVISION REPORTS



Epidemiology Division

NEW DIVISION CHIEF

Medical Director Alfred J. Aselmeyer, former Director of District 6, San Juan, Puerto Rico, became Chief of the Epidemiology Division on December 1, 1947. Surgeon Vernon B. Link, former Division Chief, left Atlanta in December for an assignment with the Hooper Foundation, University of California Medical Center, San Francisco.

MALARIA EPIDEMIOLOGISTS

Five physicians were assigned to the Division during the quarter. After a training period which included a one-week course in epidemiology, one week in general orientation, a one-week field trip to Savannah, Thomasville, and Montgomery, and a two-weeks course in laboratory methods and techniques, they were assigned as follows:

Headquarters Office

Asst. Surgeon (R) Ralph S. Paffenbarger

Little Rock, Arkansas

Asst. Surgeon (R) John H. Tuohy
Jackson, Mississippi

Asst. Surgeon (R) George F. Reed
Atlanta, Georgia

Asst. Surgeon (R) Sidney Shindell
Montgomery, Alabama

Asst. Surgeon (R) Richard L. Worcester

The last four physicians were placed in State Health Departments as assistants to State Epidemiologists. They are expected to assist in the delineation of remaining areas of active malaria transmission and to promote the use of the newer anti-malarials.

Assistant Nurse Officer Helen E. Enright was assigned to the State Board of Health in Jackson, Mississippi and Assistant Nurse Officer Beatrice Zingle to the State Board of Health in Columbia, S. C. These Nurse Officers will also assist State Epidemiologists in malaria work.

STATISTICAL BRANCH

Current recording of cases received from the Office of the Surgeon General on malaria, typhus fever, and poliomyelitis was continued.

MALARIA. Morbidity and mortality tables for all states for 1940 through 1946 were prepared. Information on number of cases, and notes differentiating between infections acquired inside and outside the United States were tabulated for 1945 and 1946. Malaria morbidity data for 1946 for all states, by counties, were compiled. These data were also presented on spot maps by various categories.

TYPHUS FEVER. Reports of typhus cases and rates were prepared as an aid in selection of areas where control measures are needed. In collaboration with the staff of the Typhus Investigation Project in Thomasville, statistical procedures were established for analysis and interpretation of data collected in that project.

POLIOMYELITIS. Current reports of poliomyelitis were plotted by states, and epidemicity was evaluated by control chart methods. Tabulation and analysis of data collected in the Wilmington, Delaware poliomyelitis experience was begun. (See CDC Bulletin, Oct., Nov., Dec. 1947, p. 25.) Statistical assistance was provided for evaluation of entomological data collected in Florence, Alabama during 1946. Studies were begun on frequencies of poliomyelitis occurrence in specific local areas of the United States from 1932 through 1946.

ENCEPHALITIS PROJECT IN LAFAYETTE, LOUISIANA

Assistant Surgeon L. K. Bishop and Dr. R. E. Kissling set up a field base in the Health Unit at Lafayette, Louisiana on September 11 to investigate an epizootic of equine encephalomyelitis. The epidemic occurred principally in coastal Louisiana and western Texas. However, cases were reported as far north as Shreveport, Louisiana and as far east as Mississippi.

Two human cases terminated fatally while the investigation was in progress. Autopsy

material was obtained and examined in the Montgomery Virus Laboratory. A preliminary report from this laboratory indicated the presence of eastern encephalomyelitis virus. The virus was also isolated from several brains of horses dying during the epidemic.

Few mosquitoes, probably less than 300, were collected in the first two weeks. Mite collections were unsuccessful.

ENCEPHALITIS PROJECT IN NASHVILLE, TENNESSEE

For a number of years in central Tennessee and south-central Kentucky, a severe type of encephalitis has occurred. The etiological agent is still unidentified. Studies at Vanderbilt, in cooperation with Hooper Foundation and NIH, have yielded only negative neutralizations against known viruses. The severity of this problem was attested by 25 cases requiring hospitalization at Vanderbilt Hospital because of encephalitis presumably contracted during the spring and summer of 1947. This is more than twice as many clinical cases as resulted from the recent Louisiana epidemic of Eastern Equine Encephalitis. Investigations of this disease were begun last July in Tennessee.

Assistant Surgeon Lindsay K. Bishop and S. A. Sanitarian (R) George A. Thompson, Jr., conducted preliminary epidemiological and entomological surveys in the vicinity of Nashville and Oak Ridge, Tennessee. Later, Dr. Robert E. Kissling, veterinarian, and Dr. Harold R. Dodge, entomologist, began more extensive surveys. Results of the work are not yet available.

TYPHUS INVESTIGATIONS AT THOMASVILLE, GEORGIA

Observations on comparisons of control measures have been continued. Six human cases were detected in Decatur County, 22 from Grady, five from Thomas (none of these cases occurred during the quarter just completed), and none from Brooks. In Decatur County rat poisoning has been done, Brooks and Thomas have been dusted with DDT, and Grady served as the check county

where no control measures were applied. The accompanying tabulation shows the percentage of rat bloods positive for the typhus complement-fixation test during the quarter.

Five rounds of DDT (10%) dusting were completed in both Thomas and Brooks counties. *X. cheopis* and *L. segnis* continued

to be well controlled. Density of the latter ectoparasite is normally low during this period of the year, but it has been virtually absent from Thomas and Brooks County collections for the last few months. The apparently partial control of *L. bacoti* continued. Results with *P. spinulosa* were still uncertain.

<u>County</u>	<u>Treatment</u>	<u>July</u>	<u>August</u>	<u>September</u>
Decatur	Rat poisoning	15.7%	38.8%	21.6%
Thomas	DDT dust	13.6%	8.5%	5.9%
Brooks	DDT dust	5.6%	5.8%	4.0%
Grady	Check — no treatment	39.8%	46.4%	41.2%

Engineering Division

MALARIA CONTROL OPERATIONS

Residual spraying activities were, for the most part, completed by September 30 and evaluation of the season's work was begun. Indicative of the sharp curtailment of operations is the more than 50 percent reduction in CDC field employees; a total of 467 persons were carried on the rolls on October 3 as compared to a peak of 954 persons reached on August 1. Some factors to be determined before inauguration of next season's residual spraying operations include: 1) the feasibility of a single DDT spray application per season for effective malaria control, 2) entire premise spraying vs. spraying of residences and privies only, and 3) the possible effect of previous DDT applications on the deterioration of subsequent applications.

In connection with the single residual spray application, early reports received from experimental projects being carried on by states indicate that one spray application per season may be satisfactory for the control of *A. quadrimaculatus*. Data from one state has indicated that a single application of 300 mg. of DDT per square

foot of surface would provide adequate control for a period of eight months. It was the concensus of all states that from an economic standpoint the one spray application per season is highly desirable. Since considerable financial assistance is being obtained from local sources, principally on the strength of the control of flies and other insects, it is felt that a thorough review of each state's program and of all available entomological data will be necessary before definite recommendations can be made.

TYPHUS OPERATIONS

Tabulations of records on rat ectoparasites obtained during the first six months of 1947 are in process of preparation and a new method of comparing control is being completed. This method consists of comparing the percent of rats infested with a particular ectoparasite species before and after dusting. It is believed that this comparison, together with the ectoparasite index, will give a much more complete picture of the results. Tabulations of reported human typhus cases by counties by

months, and of the effect of the C. W. A. rat poisoning program (1933-1934) on the incidence of typhus were completed.

Experimental five percent DDT dusting projects were under way in 13 counties in six states; experimental five percent DDT spraying projects were under way in nine counties in five states; experimental ANTU-DDT dusting projects were being carried on in Atlanta, Memphis, and Chattanooga; and plague surveys were under way in Pensacola, Savannah, Charleston, Galveston, and Norfolk. Results of these operations and surveys will be forthcoming as soon as possible.

SUMMARY OF TYPHUS CONTROL OPERATIONS (JULY 1 - AUGUST 31, 1947)					
TYPE	NO. STATES	NO. COUNTIES	PREMISE APPLICATI-ONS	M. H. PER PREMISE	AMT. PER PREMISE
Residual Dusting					
10% DDT Dust	11	174	80,622	0.58	2.79 lbs.
Rat Poisoning	9	143			
Food Bait			31,900	0.48	0.85 lbs.
Liquid 1080 Poison			9,339	1.22	1.36 pts.
Ratproofing		73*	813	53.17	—
*Projects Reporting					

PLAGUE ACTIVITIES

Tentative plans have been formulated for plague investigations and control for F. Y. 1949. Operational plans for six areas have been submitted to the Medical Director in Charge of the Plague Suppressive Measures Office for his comments, and representatives of the Public Health Service and of the Fish and Wildlife Service have scheduled a joint meeting where plague control operations of the two agencies will be discussed.

DISASTER AID PROJECTS

During the quarter the Division assisted in three disaster aid projects: the Mississippi and Missouri River floods, the Florida "red tide" fish kill, and the hurricane relief work in Mississippi and Louisiana. Personnel, materials and equipment were made available to the affected states. Consultant service was rendered the State of Louisiana during the recent outbreak of equine encephalitis. CDC and locally paid personnel assisted in the DDT residual spraying operations undertaken as a control measure.

Entomology Division

HEADQUARTERS OFFICE

Among activities of the Division during the quarter were the inauguration, in cooperation with the State Board of Health, of special surveys in Florida. Included were a study of *Anopheles albimanus* to determine its distribution in South Florida; a study of ticks to determine abundance and relation to disease (See CDC Bulletin Oct., Nov., Dec. 1947, p. 30); and investigation of the red tide - fish kill problem (See CDC Bulletin Oct., Nov., Dec. 1947, p. 27.)

FIELD PROJECTS

DYSENTERY CONTROL PROJECT

OPERATIONS: During the report period

3,846 city blocks in Pharr, Texas were treated in connection with dysentery control observations. In this operation, which required 8,657 man-hours, over 11,000 gallons of DDT emulsion and 3,180 gallons of DDT suspension were used. Indoor treatment was applied to 1,613 of the homes in the area at the rate of about 1-2/3 quarts of 5% emulsion per home. In addition, about 110 gallons of DDT emulsion were dispersed as fly larvicide.

NEW PROJECTS ADDED: Fly surveys have been undertaken preliminary to the establishment of two new dysentery control investigation projects at Albuquerque, New Mexico, and Thomasville, Georgia. These areas present problems vastly different

from those in the lower Rio Grande Valley of Texas and from each other.

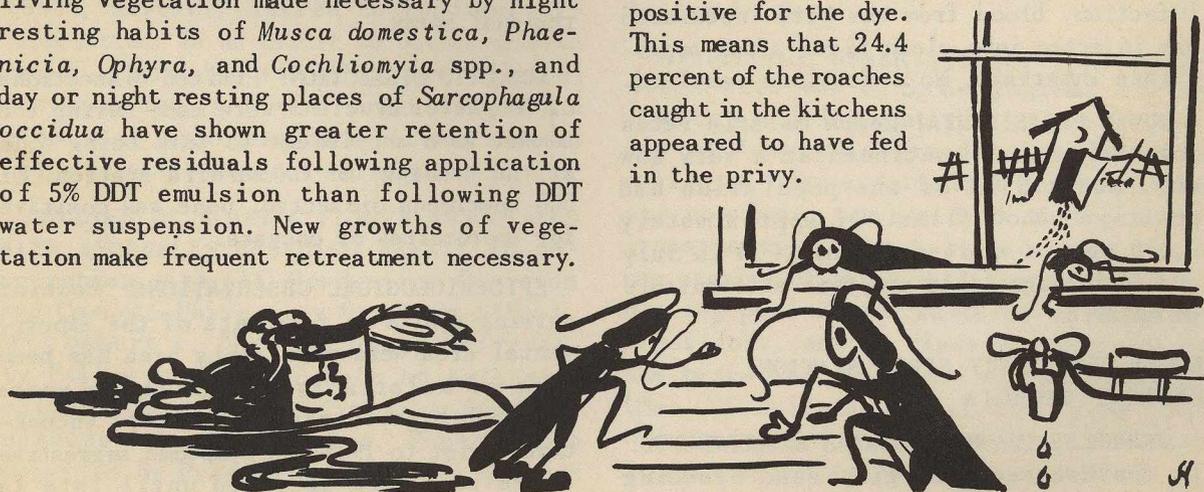
Heavy concentrations of flies in the New Mexico area followed relatively heavy rains subsequent to an abnormally long drought, and represented cumulative production from favorable breeding places. Due to the nature of the climate and sparse habitation of the region these foci of breeding were comparatively small. In Thomas County heavy fly populations were widespread and were not restricted to localized areas. In both places *Phaenicia* spp. were more abundant in the large urban communities, Thomasville and Albuquerque, than in the small villages. This was probably due to a larger proportion of garbage breeding in these two towns. The higher proportion of livestock to human populations probably accounted for a higher house fly density in the small villages.

Proportionately higher indoor fly counts were found in Thomas County as compared to those in the New Mexico area. This may be a reflection of weather conditions. In Georgia the temperature was consistently lower for the period and frequent storms caused flies to seek shelter. Data collected in these studies are being recorded upon coded survey sheets for machine tabulation.

RESIDUAL DDT STUDIES: It is believed that surface temperatures in this locality, more than rainfall or ultraviolet light, cause deterioration of DDT deposits. Tests on the duration of DDT effectiveness upon living vegetation made necessary by night resting habits of *Musca domestica*, *Phaenicia*, *Ophyra*, and *Cochliomyia* spp., and day or night resting places of *Sarcophagula occidua* have shown greater retention of effective residuals following application of 5% DDT emulsion than following DDT water suspension. New growths of vegetation make frequent retreatment necessary.

ROACH STUDIES: On April 1, 1947 investigations were begun to ascertain the role of roaches in the transmission of bacillary dysentery. Before these insects can be incriminated in such transmission it must be established that they migrate from sources of infection to places such as houses where they may infect food. Preliminary observations on the problem have included surveys to determine the normal habitats of the several species of roaches in the area. Only *Periplaneta americana*, the American roach, has been found in privies except in one city, Donna, where *Supella supellectifissida*, the Southern banded roach, occurred in small numbers in privies during September. These two species, together with *Blatella germanica*, the German roach, or croton bug, inhabit most of the dwellings in the area. Two other habitats of the American roach are sewers and water meters. To determine the effect of fly control operations on roach abundance, traps were placed in sewers of one untreated town and one treated town. In the untreated town an average of 29 roaches per trap ~~were~~ taken while in the treated town the average was eight roaches per trap.

Data on the migratory habits of roaches was obtained by dusting flour mixed with methyl blue in several privy pits. Subsequently, roaches caught in traps in the pits and in surrounding houses were dissected to detect evidence of feeding on methyl blue. All told, 233 roaches were trapped in the houses, of which 57 were positive for the dye. This means that 24.4 percent of the roaches caught in the kitchens appeared to have fed in the privy.



MALARIA FIELD INVESTIGATIONS

MANNING, S. C.

MOSQUITO POPULATION STUDIES: Studies on seasonal densities of *A. quadrimaculatus* and *A. crucians* in stables have continued. *A. crucians* densities were moderate to high from April through September. *A. quadrimaculatus* densities were low until the middle of August. The low water levels in the reservoir appear to be responsible primarily for the small number of quads this year, since during 1946 when the water level was high the quad population was much greater. On the other hand, *crucians* is not affected appreciably by low water levels. This species breeds only in limited numbers in the feather-edge zone of the reservoir, the habitat which is eliminated by low water levels.

MOSQUITO DISSECTIONS: During 1947 (and chiefly in this quarter) 2,043 *A. quadrimaculatus* were dissected. A sporozoite-positive gland rate of 0.097% was found. Two positives were found in July. Concomitantly, and from the same adult mosquito collecting stations, 4,124 *A. crucians* furnished a seasonal positive of 0.14%. All of these sporozoite-positive mosquitoes came from stations near the reservoir.

AVIAN MALARIA STUDIES: Evidence from inoculation into canaries of sporozoites found in *crucians* suggests more and more that the canary is not a suitable host for these sporozoites. To determine if the inoculated sporozoites produce a low grade infection, blood from the bird inoculated was injected into clean birds after appropriate intervals. No infections resulted.

HUMAN PARASITEMIA. Human malaria rates for the quarter continued at a very low ebb. About 0.3% of the population had positive blood films. Of approximately 2,000 people visited monthly, 14 in July and 14 in August had symptoms attributable to malaria.

EMORY UNIVERSITY FIELD STATION,
NEWTON, GEORGIA

ANOPHELES QUADRIMACULATUS MEASUREMENTS:
In southwestern Georgia, quad breeding

started some six weeks later in 1947 than in the previous year. By the first of July, however, densities of *Anopheles quadrimaculatus* were at the previous year's level. Studies are being made to compare larvae development rates for 1946 and 1947 in relation to physical factors such as precipitation, temperature, and antecedent winter conditions.

During the quarter reconnaissance surveys were conducted to obtain information on the areal distribution of adult *Anopheles* and their breeding places. These surveys confirmed previous indications that breeding of all three species is uniformly distributed. In cooperation with the U. S. Geological Survey and the Georgia Department of Mines, Mining, and Geology, studies are being conducted to determine if breeding areas of different types are correlated with characteristic geologic formations.

PRECIPITIN TESTS: From July through September approximately 6,000 *Anopheles* specimens were collected for precipitin tests. In these collections, attempts were made to secure specimens from all resting places at each premise inspected. Results of the tests indicate that the primary hosts of the three anopheline species in the area are equine, bovine, and porcine, in this order. All houses in this area were sprayed with DDT on the state program. Results of the precipitin tests are, accordingly, indicative of breeding habits in an area where houses have received DDT residual spray.

MOSQUITO DISSECTION: Limited dissections of *Anopheles crucians* were made during the summer as a supplement to work being done at the Manning, S. C. malaria station. Of 500 specimens dissected, none was positive for sporozoites or oocysts.

EPIDEMIOLOGICAL OBSERVATIONS: Routine nursing visits to residents of the experimental area were made. This area has been free of malaria for about three years although high malaria rates were encountered prior to 1944. No symptoms suggestive of malaria were detected until late in



Low water level eliminates favorable quad breeding places in the Santee-Cooper Reservoir.

August when a few febrile cases were located. They were diagnosed by a local physician, on the basis of clinical symptoms, as being malaria. Laboratory tests, however, failed to confirm this supposition. In an effort to detect malaria cases, several hundred films were collected and examined. All were negative. In the absence of supporting data, it was assumed that the cases were not malaria.

STUDIES OF AQUATIC PLANTS ASSOCIATED WITH ANOPHELES BREEDING AREAS: In cooperation with CDC Production Division and Cornell University Graduate School, Mr. Robert F. Thorne, Emory University Fellow in Botany, made an extensive collection of aquatic plants from *Anopheles* breeding places. Photographs obtained by Production Division through

the course of this work will be issued in the form of a category film strip. Approximately 17,000 plant specimens, representing some 1,400 species, have been collected to date.

HYDROLOGIC OBSERVATIONS: In cooperation with the U. S. Geological Survey studies are being continued on the hydrology of *Anopheles* breeding ponds. Data collected over a period of several years are now being analyzed. A multiple regression equation has been devised which has promise of being satisfactory for predicting pond stages in terms of climatic conditions, and in classifying ponds on the basis of hydrologic characteristics. (See CDC Bulletin April, May, June 1947 "Hydrologic Investigations Related to Studies of *Anopheles* Bionomics.")

Technical Development Division

BRANCH NOTES

INSECTICIDE INVESTIGATIONS BRANCH

Experiments were conducted to evaluate the residual toxicity of chlordane and water-wettable DDT. It was found that chlordane acts partially as a fumigant; best results may be expected in situations where a concentration of vapors can be obtained. The initial quantity deposited is more important, therefore, than is surface coverage - the important factor when DDT is used.

In outside applications, chlordane is inferior to both water-wettable DDT and DDT emulsion. There is evidence, however, which indicates that an 80 percent DDT-20 percent chlordane combination may be slightly superior to straight DDT against *Anopheles quadrimaculatus*.

CONTROL METHODS AND EVALUATION BRANCH

CHLORDANE AND DDT. To compare effectiveness of DDT and chlordane against quads, under operational conditions, thirty unoccupied bedrooms of uniform size and construction in an abandoned housing project were treated. It was found that for the first four and one-half months after treatment, 200 mg. per square foot dosages of DDT are slightly more effective than equal applications of chlordane; 400 mg. treatments are about equally effective; and 800 mg. treatments of chlordane are better than applications of equal amounts of DDT. Efficiency of the larger doses is probably due to the fumigant action of chlordane.

Rooms treated with 200 mg. of chlordane, and those treated with similar dosages of DDT, were retreated with 200 mg. per square foot of the respective insecticide approximately three months after the first application. Tests made one and one-half months after the second treatment indicated an increase in the toxicity of both DDT and chlordane. Neither gave as good results as the original treatments on untreated surfaces, however.

Somewhat different results were obtained when the effectiveness of chlordane and

DDT against house flies was evaluated in similar tests.

Several series of three rooms were treated with DDT and others with chlordane. In both cases xylene emulsions were used. Dosages were 50, 100, 200, 400, and 800 mg. of the toxicant per square foot of surface. It was found that DDT was superior to chlordane in all cases.

When retreated with DDT, there was an increase in efficiency in rooms previously treated with 50 and 100 mg. At the 200 mg. dosage, the increase was less pronounced.

DDT APPLICATION. Additional data were obtained on the duration of DDT residual treatments. Surfaces of rooms treated in 1944 with five percent DDT kerosene solution, five percent DDT-xylene-Triton X-100 emulsion, and 20 percent DDT-xylene solution have been tested periodically for residual toxicity. Tests made during 1947 indicated that, under ideal conditions, DDT may retain a high degree of effectiveness for over three years in unoccupied plaster-board rooms which are protected from sunlight and weather.

It has also been found that residual house treatments are appreciably more effective for control of *A. quadrimaculatus* if applied to the backs and undersides of furniture when walls and ceilings are treated.

ANOPHELINE LARVICIDE INVESTIGATIONS. A series of tests was conducted to determine the relative effectiveness of DDT and DDD as anopheline larvicides. Various dosages, ranging from 0.0125 to 0.05 pound per acre in one gallon of fuel oil, were compared. Preliminary results of tests made with less than 0.05 pound per acre were so erratic that only tests using 0.05 pound or more per acre were continued.

Experimental results indicated that similar dosages of the two materials are about equally toxic to anopheline larvae, when used as an atomized spray in No. 2 fuel oil. Larval reductions were found to be more consistent with treatments of higher

dosages. Larval kill was slightly higher (after 24 hours) with 0.1 pound DDD per acre than for the 0.05 pound treatment. After 72 hours following treatment the number of larvae in the test areas was about the same. This probably indicated that reinfestation occurred within three days at either dosage. It was found that the addition of a spreading agent may prevent reinfestation.

Six tests were made with chlordane in fuel oil applied at the rate of 0.05 pound per acre. Five one-hundredths pound of material was dissolved in one gallon of fuel oil. There was an average larval mortality of 95 percent 24 hours after treatment.

HOOKEWORM CONTROL INVESTIGATIONS. Laboratory tests made with 16 candidate hookworm larvicides indicated that calcium cyanamide was the most promising.

Tests were conducted on outdoor test plots six feet square which were divided into 36 one-foot squares. Three squares in each test plot were inoculated repeatedly with infected feces until infective larvae of *Ancylostoma caninum* or *Necator americanus* were numerous. The candidate larvicide was then applied. Applications of infected feces were continued for approximately one month following treatment. The soil from the test squares was then removed to a depth of one inch. Infective stage larvae were removed and counted. A comparison of these results with counts from control plots treated with salt indicated effect of the larvicide.

When *A. caninum* was used, a significant reduction in the number of larvae occurred after treatment with calcium cyanamide. Larvae of *Necator americanus*, however, increased in comparable tests. Salt treatment had no effect.

While calcium cyanamide, when applied to hookworm-infected soil, apparently causes some reduction in infectious larvae, further field testing is necessary before recommendations for operational use can be made.

RODENT AND ECTOPARASITE CONTROL BRANCH

TESTS OF ACARICIDES. Two types of preliminary tests have been used for determin-

ing acaricidal action of candidate compounds. In a screening test, mites were placed on a thin continuous layer of the test material in a petri dish. The material inhibited movements of the mites so that few escaped during the 30-minute test period. Compounds which did not kill mites by direct contact were not investigated further. If subsequent testing was indicated, mites were exposed to sprayed or dusted surfaces, treated at the rate of approximately 200 mg. of material per square foot.

Results of these tests indicated that several candidate acaricides should be tested in rat runs to determine their efficiency under field conditions.

FIELD OBSERVATION ON DDT EMULSION IN CONTROLLING RAT ECTOPARASITES. To test the efficiency of DDT spray in controlling ectoparasites of rats, premises in Lowndes County, Georgia have been sprayed with five percent emulsion since March 1947. Rats collected 123 days after spraying were found to have an average of 1.0 flea. The index on untreated farms was 11.6 fleas per rat. Only nine percent of rats taken from treated premises had any fleas, in contrast with 83 percent infestation on untreated farms.

RATPROOFING STUDIES. Several materials were tested to determine their resistance to rat gnawing. In these experiments rats were placed in a cage with the test material used as a barrier between the rat and food. Rats could be used for only a short time since they soon became accustomed to feeding when the barrier was removed and would not attempt to gnaw through to reach food.

Composition materials such as Johns-Manville 6BX and "Century" APAC sheet material 1/4 or 3/16 inch thick, were found to be very resistant to rat gnawing. Aluminum materials tested have not been resistant.

VECTOR TRANSMISSION BRANCH

Studies to investigate transmission of endemic typhus fever within the animal reservoir were undertaken. Colonies of the tropical rat mite, *Liponyssus bacoti*, have been established successfully and technics for handling mites have been developed.

Laboratory Division

LABORATORY TRAINING COURSES

Courses in the laboratory diagnosis of parasitic diseases have been conducted periodically by the Laboratory Division for the past two years. During the period October 1945 to August 1947, eight six-weeks courses were held for laboratory technicians and other laboratory workers. A total of 157 individuals representing 42 states, the District of Columbia, Alaska, Puerto Rico, Canada, Greece, and Bolivia received this training. Certificates were issued to 132 students upon satisfactory completion of the courses.

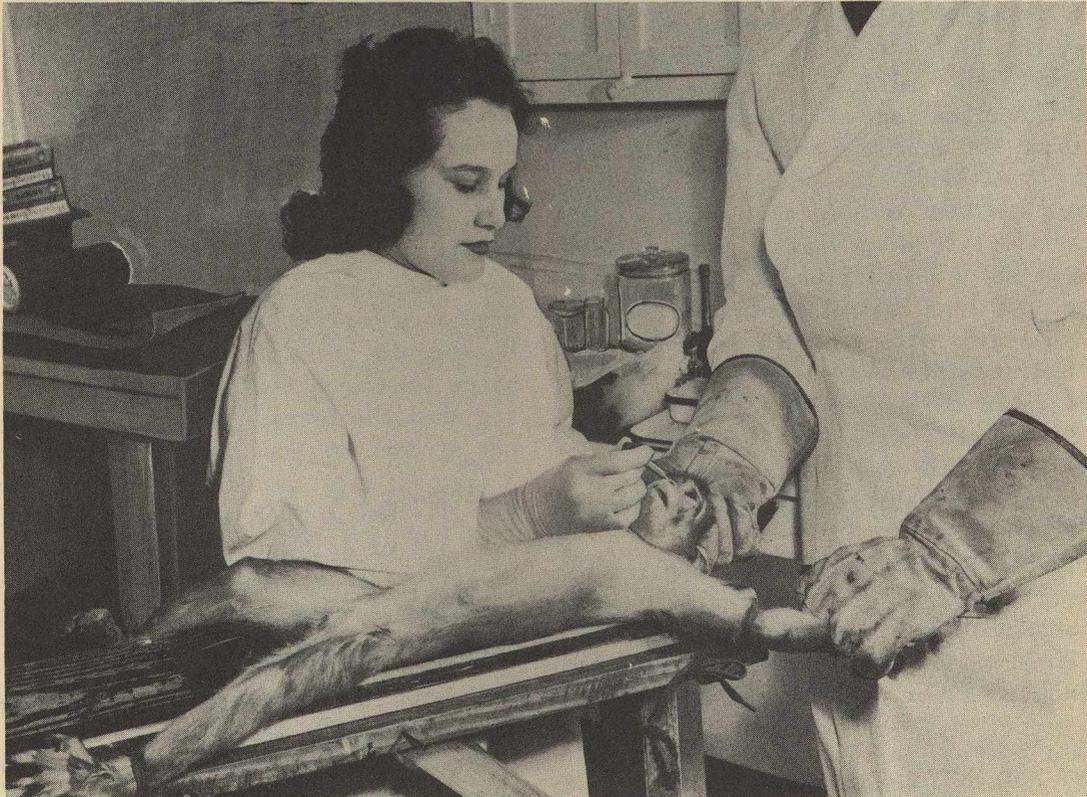
A regular six-weeks course for all grades of laboratory personnel was held from July 7 to August 15. A shorter course specifically for laboratory directors and epidemiologists was offered from August 18 to August 29, 1947. Twelve persons attended this course.

ROUTINE LABORATORY TESTS

During the quarter the following tests were made: precipitin tests in connection with mosquito host-preference studies, 7,870; blood film examinations for malaria parasites, 2,876; complement-fixation tests for typhus fever, 9,718; complement-fixation tests for spotted fever, 127; complement-fixation tests for Q fever, 105; agglutination tests, 131. In addition to the above, approximately 500 miscellaneous routine tests were made and 204 arthropods identified for state, local, or private laboratories.

BRANCH NOTES

BACTERIOLOGY BRANCH. Organization of the Bacteriology Branch was completed during the quarter. Dr. Martin Frobisher, Jr. was appointed bacteriologist in charge. Dr. Frobisher, who will assume his duties at



Nasal injection of material suspected of containing poliomyelitis virus.

the end of the present scholastic year, is now Associate Professor of Bacteriology at Johns Hopkins University.

Organization of the Tuberculosis Section has been completed. Personnel now includes three medical technicians, one consultant laboratory assistant, one bacteriologist, and two physicians.

The T. B. Laboratory obtains material from Lawson Veterans' Administration Hospital, the Georgia State Department of Public Health, and Battey Hospital. In connection with work on evaluation and diagnostic methods, a total of 3,500 procedures including microscopic examinations, culture preparations, and animal inoculations was performed. The efficiency of direct smears, concentrated culture on Lowenstein's medium, and culture on the medium recommended by the American Trudeau Society is being evaluated. Several strains of mice have been compared in conducting virulence tests.

Work in the Mycology Section is under the direction of Dr. Norman Conant whose laboratory is at Duke University, Durham, N.C. S.A. Scientist Libero Ajello recently joined

the staff of the Mycology Section.

The Mycology Laboratory worked in close collaboration with the T. B. Evaluation Laboratory to identify fungi isolated from specimens submitted for T. B. examination. So far, 40 cultures of fungi have been obtained; two were pathogenic types.

VIROLOGY BRANCH. In addition to the routine work of the laboratory, several projects were undertaken during the quarter.

Experiments were conducted to evaluate methods of recovering poliomyelitis virus from insects and from fecal suspension.

Strains of spotted fever rickettsiae have been established to be used in detecting the virus in arthropods or in man. Two infected chick embryos were received from the National Institute of Health, from which several subinoculations were made and guinea pigs infected.

Cultures of *Leptospira icterohemorrhagiae* and *Leptospira canicola* were obtained and are being maintained on artificial culture media. With these strains of spirochetes it will be possible to perform diagnostic tests on suspected cases of leptospirosis.

Production Division

The Production Division moved half of the physical equipment and 80% of the personnel from the Rialto and Forsyth Buildings to Lawson Veterans' Administration Hospital during the quarter. Facilities have been improved by enlarged working space and more suitable arrangement. A small theatre has been acquired for conversion into a sound-recording studio. Equipment formerly installed in the projection booth at 291 Peachtree Street was moved to the studio and new equipment has been obtained to handle adequately all sound-recording requirements.

CONFERENCE WITH SOUTHEASTERN MEDICAL SCHOOL PERSONNEL

A regional conference of southeastern

medical school personnel interested in audio-visual production was held August 11-13. Purposes of the conference were to discuss 1) techniques of production as practiced by CDC; 2) productions and teaching techniques used by university personnel; and 3) collaboration between universities and CDC. Also considered was the possibility of providing CDC facilities to independent producers in southern medical schools so that professional quality could be achieved.

ASSOCIATION OF PROFESSORS OF PREVENTIVE MEDICINE CONFERENCE

A conference of the Audio-Visual Committee of the Association of Professors of Preventive Medicine met at the Production

Division of CDC August 25-27 with Dr. Tra-
wick H. Stubbs of Emory University as chair-
man. The visual teaching aids needed for
various curricula and techniques of teach-
ing with visual aids were discussed. A list
of needed productions was compiled and
approximate priorities assigned. Partici-
pants in the conference offered their ser-
vices for consultation, film surveys, pre-
viewing, and evaluation. Plans were made
for continued collaboration of the group,
collectively and individually, with the
Production Division.

PRODUCTION FOR V. D.

Durwood Thayer, motion picture cameraman
and still photographer of the Production
Division, was assigned to the Venereal
Disease Division hospital at Hot Springs,
Arkansas, where documentary material will
be obtained on venereal diseases for future
use in films and film strips.

PRODUCTION FOR HOSPITAL FACILITIES

The Production Division has agreed to
produce four informative film strips for
the Hospital Facilities Division in connec-
tion with the hospital survey and construc-
tion program. The first of these film strips
has been brought to the stage of final
production.

THE INTER-DEPARTMENTAL PRODUCTION COMMITTEE

The CDC Production Division Chief attend-
ed several meetings of the Inter-depart-
mental Committee during the quarter. Tenta-
tive lists of proposed CDC productions for
F. Y. 1948 and descriptions of stock foot-
age sequences available to other agencies
were presented.

The Inter-departmental Committee comprises
representatives of audio-visual production
divisions from several government agencies.
Its purpose is to coordinate productions of
member agencies and to assist generally in
promoting mutual collaboration.

CDC EXHIBIT AT ATLANTIC CITY

The Production and Engineering Divisions
constructed an exhibit for the APHA Conven-

tion which met in Atlantic City from Octo-
ber 6 to 10. The display was 32 feet long
and four feet high; it had five movable
wheels, pictorially representing the five
main functions of CDC: (1) Control Opera-
tions, (2) Production, (3) Training,
(4) Technical Development, and (5) Epi-
demiology. Each wheel was a pictorial com-
posite of activities.

PRODUCTIONS RELEASED DURING THE QUARTER

1. 5-072 Staining Blood Films for Malaria Para-
site Examination (CDC Bulletin Oct.,
Nov., Dec., 1947 p. 38.)
2. 5-071 Preparing Blood Films for Microscopi-
cal Examination (CDC Bulletin Oct.,
Nov., Dec., 1947 p. 38.)
3. 5-051 Identification of Malaria Parasites in
Thin Blood Film, CDC Bulletin Oct.,
Nov., Dec. 1947. p. 38.)
4. 9-011.0 B. C. G. Slide Series
5. 9-012.0 Arkansas Slide Series
6. 6-077.0 A.P.H.A. Exhibit
7. 4-052 Sanitary Land Fills (CDC Bulletin
April, May, June 1947 p. 26-37.)

FILM STRIPS AND TRAINING FILMS IN PRODUCTION

1. 4-056 Diagnosis of Tuberculosis with an Im-
proved Culture Medium
2. 4-050 Typhus Complement Fixation Test
3. 5-030 Life Cycle of the Malaria Parasite
4. 5-090 Spread and Prevention of Trichinosis
5. 5-095 Worms in Your Muscles
6. 4-053 Life Spirals of *Trichinella Spiralis*
7. 5-015 Identification of U. S. Genera of Adult
Female Mosquitoes
8. 5-052 Identification of Malaria Parasites in
the Thick Blood Film
9. 5-092 Aquatic Plants Associated with *Anopheles*
Mosquito Breeding Areas
10. 5-081 Sanitary Design of Drinking Fountains
11. 5-085 Closing In
12. 4-045 Aircraft Quarantine
13. 4-001 Malaria Control in Kentucky Reservoir
14. 4-046 McGehee Bayou
15. 4-047 Hand Ditching in South Carolina
16. 5-077 Identification of Ectoparasites in Rat
Lice
17. 5-040 Clinical *Falciparum* Malaria
18. 5-043 Clinical *Vivax* Malaria
19. 5-073 Hookworm Disease and Hookworm Infection
20. 4-034 Life Cycle of *Schistosoma Mansoni*
21. 4-051 Spleen Puncture in Leishmaniasis

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| <p>22. 4-058 Microfilariae of <i>W. Bancrofti</i>
 23. 4-059 Infective Larvae of <i>W. Bancrofti</i>
 24. 4-060 Miracidia of <i>Schistosoma Japonica</i>
 25. 4-061 Movements of <i>Endamoeba Histolitica</i>
 26. 4-062 <i>Schistosoma Mansoni</i>
 27. 4-063 Schistosomes - Adults in the Veins
 28. 4-064 Cercariae of <i>Schistosoma Mansoni</i>
 29. 4-065 The Setting of Endemic Schistosomiasis in Puerto Rico</p> | <p>30. 4-066 Snails (<i>Australorbis Glabratus</i>)
 31. 4-067 Miracidia and Eggs of <i>Schistosoma Mansoni</i>
 32. 4-068 Pathology of <i>Schistosoma Mansoni</i>
 33. 5-093 The Eradication of Rabies
 34. 5-100 The Hospital of Tomorrow
 35. 4-049 Epidemiology of Murine Typhus
 36. 4-043 Life Cycle of the Fish Tapeworm (<i>Diphyllobothrium latum</i>)</p> |
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Training Division

Training activities during the quarter included courses in sanitary engineering, industrial hygiene and public health education.

A 12-week sanitary engineering training course was given at the Columbus Public Health Training Station, in Atlanta, and at the Albany Station. Particular emphasis was given to work of sanitary engineers in local health units.

The industrial hygiene course, conducted from June 16 to August 30, was given in cooperation with the Industrial Hygiene Division of the Georgia Department of Public Health and the Georgia School of Technology. Academic work given at Georgia Tech was integrated with two days of field work each week. Supervised field trips were made to industrial plants in the vicinity of Atlanta. Thirteen trainees from eight state health departments completed the course.

At the Savannah Field Training Station, the 12-week course for health educators was given from June 23 to September 13. A short course for public health nurses was also conducted at Savannah.

NEW PLAN FOR PUBLIC HEALTH NURSING TRAINING

The Public Health Nurse Orientation Program, which has been conducted periodically at the Savannah Field Training Station since the beginning of the internship training program, was discontinued and S. A. Nurse Officer Madeleine Pershing transferred to Training Division Head-

quarters in Atlanta. Miss Pershing will work through the Public Health Service District offices to assist State Health Departments in establishing programs for training Public Health Nurses within the States. Services provided by the CDC Training Division will include advice on the guidance of supervisory nurses who will be locally responsible for the program, equipment needs, training, and integration of services offered by the local health department and other community and health agencies. A uniform procedure of evaluating students' progress and the quality of the field experience gained is being formulated. In general, the new program is intended to provide specific training in the areas where the public health nurses will work.

TOPEKA FIELD TRAINING CENTER

A 12-week course for sanitarians was started on September 8, with eight persons attending. Every state in District No. 7 except Missouri sent a representative.

An "Instructors Manual" was compiled at the Topeka Field Training Center during the quarter. This manual is a guide for conducting environmental sanitation training programs.

FOREIGN PUBLIC HEALTH PERSONNEL TRAINING COURSE

A four-week training program for public health personnel from foreign countries was conducted from July 14 to August 8.

Malaria and typhus were given primary emphasis but methods of training public health personnel, public health administration, and over-all activities of CDC also received attention.

The accompanying list gives names of participants, their countries, and sponsoring agencies.

detailed to Troy, New York where he will work with Dr. F. E. Coughlin and Dr. Meredith Thompson, Rensselaer County Health Department. A 12-week course in general sanitation is being outlined. The first program is scheduled to begin January 5, 1948. Permanent quarters have not been selected to house this new activity which

<u>NAME</u>	<u>COUNTRY</u>	<u>SPONSOR</u>
Dr. Rajender Pal	India	Rockefeller Foundation
Mr. Apostolos Koskinides	Greece	Near East Foundation
Mr. Oscar Esteves	Peru	Pan American Sanitary Bureau
Dr. W. L. Chia	China	Rockefeller Foundation
Dr. C. C. Yen	China	Am. Bu. for Med. Aid to China
Dr. Fernando de Moura	Brazil	Inst. of Inter-American Affairs
Dr. Tumkur Chandrasekharaiya	India	Rockefeller Foundation
Dr. Uis B. Franco	Philippines	U. S. Public Health Service
Dr. R. L. Tuli	India	Rockefeller Foundation
Dr. E. D. Pridie	Egypt	British Government
Mr. Shou-win Lin	China	Am. Bu. for Med. Aid to China
Dr. Chin-t'ing Chang	China	U. S. Public Health Service

NEW FIELD TRAINING STATIONS BEING DEVELOPED

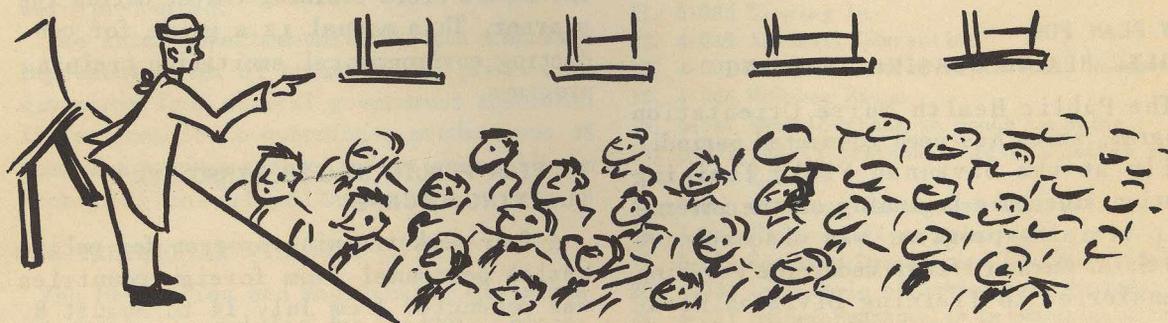
CINCINNATI, OHIO. Development of the Water and Sanitation Investigations training program was continued. A sanitary engineer from the Division is to be assigned to the Cincinnati station. The first course, of three weeks' duration, was outlined to provide practical training for sanitary engineers in water treatment, sewage disposal, and stream pollution control activities.

TROY, N. Y. The New York State-Rensselaer County Public Health Training Center is a cooperative venture being conducted with the assistance of these departments and CDC. Mr. H. E. Eagan, formerly of the Topeka Field Training Center, has been

is temporarily located at the County Health Department in Troy, New York.

DECENTRALIZED STATE TRAINING ACTIVITIES

Training Division personnel participated in seminars on insect and rodent control conducted by the Mississippi State Health Department. These seminars were held at Greenwood, Mississippi, July 29-31 and at Hattiesburg, Mississippi, August 5-7. Lectures, films, and demonstrations of insect and rodent control methods were presented. Mosquito control, rodent control, and methods of control of flies and other insects of public health importance each occupied a day on the program. Ninety-six sanitarians attended these two seminars.



Library and Reports Division

EDITORIAL BRANCH

Items issued during the quarter were:
 CDC Bulletin — January, February,
 March 1947

CDC Bulletin — April, May, June 1947
 CDC Bulletin Excerpt, "A Malaria Survey of the Denison Dam Reservoir, Lake Texoma."

CDC Bulletin Excerpt, "Hydrological Investigations Related to Studies of *Anopheles* Bionomics."

Annual Report 1945 - 46

Larviciding Handbook (Revision)

LIBRARY BRANCH

Holdings in the CDC library continued to increase. At present 220 periodicals are received regularly and more than 2,600

books are available. Following are lists of selected acquisitions in the library:

LIST I - NOVEMBER ACQUISITIONS

Allen, Edgar van Nuys, "Peripheral Vascular Diseases." 1947.

"American Aviation Air Traffic Guide." 1945.

American Council on Education. Commission on Implications of Armed Services Education Programs, "Utilizing Human Talent." 1947.

American Cyanamid Company. Lederle Laboratories Division, "The Doctors Talk It Over." 1945.

American Public Health Association. Committee on the Hygiene of Housing, "Basic Principles of Healthful Housing." 1947.



The CDC Library now contains more than 3,000 books and periodicals.

- American Society of Mechanical Engineers, "Drawings and Drafting Room Practice." 1946.
- Anson, Mortimer Louis, "Surface Action Agents." 1946.
- Association of Official Agricultural Chemists, "Changes in Official and Tentative Methods of Analysis Made at the 16th Annual Meeting Oct. 14-16, 1946." 1946.
- Behrman, Howard Taft, "Dermatologic Clues to Internal Disease." 1947.
- Bishopp, Fred Corry, "Housefly Control." 1946.
- Bockus, H. L., "Gastroenterology." 1944-46.
- Brown, S. P., "Air Conditioning and Elements of Refrigeration." 1947.
- Bryan, Claude S., "Dairy Bacteriology and Public Health." 1945.
- Burdon, K. L., "Textbook of Microbiology." 1947.
- Cantarow, Abraham, "Clinical Bio-chemistry." 1945.
- Chemical Rubber Company, "Mathematical Tables from Handbook of Chemistry." 1946.
- Clay, H. H., "Sanitary Inspectors' Handbook." 1947.
- "Colloid Science, a Symposium," 1947.
- Cova-Garcia, Pablo, "Notas Sobre los Anofelinos de Venezuela y su Identificacion." 1946.
- Dubos, Rene, "The Bacterial Cell." 1947.
- Fowell, R. R., "Biology Staining Schedules." 1946.
- Gallo, Piero, "Las Zoonosis en Venezuela por Piero Gallo y E. G. Vogelsang." 1946.
- Gamow, George, "Atomic Energy." 1947.
- Graybeil, Ashton, "Electrocardiography." 1947.
- Hagan, William Arthur, "The Relation of Disease in the Lower Animals to Human Welfare." 1947.
- Haller, Ruth, "Planning Your Meeting." 1944.
- Harries, E. H. R., "Clinical Practice." 1947.
- Harvard University, Committee on the Objectives of a General Education in Free Society. "General Education in a Free Society." 1945.
- Hazlett, T. L., "Introduction to Industrial Medicine." 1947.
- Herkimer, Herbert, "Air Conditioning." 1947.
- Hill, Harry, "Sanitary Science Notes." 1946.
- Hinchelwood, C. N., "The Chemical Kinetics of the Bacterial Cell." 1946.
- Hsiao, Tsai-Yo, "The Mosquitoes of Japan and Their Medical Importance." 1946.
- Janney, J. C., "Medical Gyneecology." 1945.
- Joe, Alexander, "The Acute Infectious Fevers." 1947.
- Kershaw, J. D., "An Approach to Social Medicine." 1946.
- Knight, Charles Robert, "Animal Anatomy and Psychology for the Artist and Layman." 1947.
- Kolmer, J. A., "Penicillin Therapy." 1947.
- Kracke, R. R., "Color Atlas." 1947.
- Lamkin, Nina B., "Health Education." 1946.
- Lederle Laboratories, New York, "The Present Status of Vitamins." 1947.
- Merchant, I. A., "Veterinary Bacteriology." 1946.
- Meredith, Florence Lyndon, "Hygiene." 1946.
- Miles, John Robert, "Audio-visual Aids in Armed Services." 1947.
- Minnesota, Univ. of "Wartime Advances in Insecticides, Repellants and Rodenticides." 1946.
- Mustard, H. S., "An Introduction to Public Health." 1947.
- National Conference for Cooperation in Health Education. National Committee on School Health Policies, "Suggested School Health Policies." 1946.
- New York State Association of Milk Sanitarians, "Papers Presented at Regional Meetings Held in Lieu of the 22nd Annual Conference at Utica. Sept. 18-19 — Sept. 1945...W. D. Tiedman, Sect. — Treas." 1945.

Pennsylvania State College. Dairy Manufacturing Division, "Manual for Dairy Manufacturing, Short Courses." 1946.

Pijoan, Michel, "A Handbook of Commonly Used Drugs Including Certain Measures for the Control of Diseases Peculiar to the Western Hemisphere." 1947.

Ryan, W. J., "Water Treatment and purification." 1946.

Sandy, A. H., "Dictionary of Engineering." 1944.

Schwartz, Louis, "Occupational Diseases of the Skin." 1947.

"Science Illustrated." 1946.

Svensen, C. L., "Machine Drawing." 1945.

Texas State Department of Health, "Food Handling and Disease Prevention." 1945.

U. S. Bureau of Medicine and Surgery, "Epidemiology of Kala Azar in China." 1946.

U. S. Bureau of Medicine and Surgery, "Mosquitoes of Okinawa and Islands in the Central Pacific." 1946.

U. S. Bureau of Mines, "Some Safety Practices for Metal Mines." 1946.

U. S. Coal Mines Administration, "Medical Survey of the Bituminous-Coal Industry." 1947.

U. S. Department of Agriculture. Agricultural Research Administration — Bureau of Entomology and Plant Quarantine. "Bibliography on Aviation and Economic Entomology." 1947.

U. S. Federal Interagency Committee on Migrant Labor, "Migrant Labor...A Human Problem." 1947.

U. S. Navy. Bureau of Medicine and Surgery, "Epidemiology of the Diseases of Naval Medical Importance in Manchuria." 1946.

U. S. Navy. Bureau of Supplies and Accounts, "Meat Handbook of the U. S. Navy." 1946.

Ulrich, Carolyn F., "Periodicals Directory." 1947.

Wannonil, Luis, "Contribucion al Estudio del Problema de Saneamiento en Venezuela." 1946.

Wodehouse, R. P., "Hay Fever Plants." 1945.

LIST II — DECEMBER ACQUISITIONS

Adams, H. S., "Milk and Food Sanitation Practice." 1947.

Alexander, H. L., "Synopsis of Allergy." 1947.

Allen, J. R., "Heating and Air Conditioning." 1946.

American Medical Association, "Voluntary Prepayment Medical Care Plans." 1947.

Bengtson, I. A., "Serological Relationships in Epidemic-Endemic Typhus Group." 1946.

Buchanan, Alexander Mac Gregor, "Buchanan's Manual of Anatomy." 1946.

Encyclopaedia Britannica, "Ten Eventful Years...1937-46." 1947.

Gardner, H. A., "Physical and Chemical Examination." 1946.

Hawk, P. B., "Practical Physiological Chemistry." 12th ed. 1947.

Hill, Harry, "Sanitary Science Notes." 1946.

Hope, E. W., "Textbook of Public Health." 1946.

Krulevitch, Walter, "Radio Drama Production." 1946.

MacBryde, C. M., "Signs and Symptoms, Their Clinical Interpretation." 1947.

Moirriott, Williams McKim, "Infant Nutrition; a Textbook of Infant Feeding for Students and Practitioners of Medicine." 1947.

Mountin, J. W., "The Health Center, Adaptation of Physical Plants to Service Concepts." 1946.

National Research Council, Committee on Growth, "The Research Attack on Cancer." 1946.

Osler, Sir William Bart, "The Principles and Practice of Medicine." 1947.

Parker, Harry, "Simplified Engineering for Architects and Builders." 1947.

Potter, Edith L., "Rh; its Relation to Congenital Hemolytic Disease and to Intragroup Transfusion Reactions." 1947.

Stedman, Thomas Lathrop, "Practical Medical Dictionary." 1946.

Steel, E. W., "Water Supply and Sewerage." 1947.

U. S. Civil Service Commission, "Official Register of the U. S., 1946." 1947.

- U. S. Strategic Bombing Survey, "The Effects of Atomic Bombs on Health and Medical Services in Hiroshima and Nagasaki." 1947.
- Waksman, Selman A., "Microbial Antagonisms and Antibiotic Substances." 2nd ed. 1947.
- Wright, Sampson, "Applied Physiology." 1945.
- LIST III - JANUARY ACQUISITIONS
- Ackerman, L. V., "Cancer; Diagnosis Treatment and Prognosis." 1947
- "Alphabetical Directory of the Pest Control Industry of the U. S., Canada, Foreign Countries and Reference Buyers Guide." 1947
- American Public Health Association, "Membership Directory." 1946
- Conant, James Bryant, "The Chemistry of Organic Compounds, A Year's Course in Organic Chemistry." 1947.
- Deming, Dorothy, "The Practical Nurse." 1947.
- Gates, Olive, "Handbook for the Diagnosis of Cancer of the Uterus." 1947.
- Holmes, G. W., "Roentgen Interpretation." 1947.
- Mantell, C. L., "The Water Soluble Gums." 1947.
- Mountin, J. W., "Guide to Health Organization in the United States." 1947.
- National Association of Insecticides and Disinfectant Manufacturers, Inc., "Compilation of Laws." 1947.
- National Organization for Public Health Nursing, "Personnel Policies for Public Health Nursing Agencies." 1946.
- Rice, Thurman B., "The Hoosier." 1946
- Tobey, James Alner, "Public Health Law." 1947.

Veterinary Division

The Veterinary Public Health Section of the States Relations Division was transferred in September to the Communicable Disease Center where it will be known as the Veterinary Division of CDC. There are two branches in this Division, the Control Demonstrations Branch and the Investigations Branch. The following projects are in progress:

RABIES. Rabies investigation activities described elsewhere in this issue of the Bulletin are being conducted at the Virus Laboratory, Montgomery, Alabama, under the direction of S. A. Scientist (R) Ernest L. Tierkel.

SALMONELLA. Animal reservoirs of salmonella diseases are being investigated at the Michigan State Veterinary Clinic. Dr. Arthur H. Wolff, in charge, found that 1% of the dogs admitted to the Clinic are infected with salmonella organisms. To date sixteen types of the organism have been identified. Investigations were made of

households from which the dogs came, but no cases of human salmonella disease were found. In two instances, histories of illnesses with gastrointestinal symptoms were obtained.

BRUCELLOSIS. Brucellosis studies are being conducted in Johnson County, Indiana, in cooperation with the U. S. Bureau of Animal Industry, the State Department of Health and the State Veterinarian. Activities are concerned primarily with incidence of brucellosis among employees of packing houses. Fifteen to 30% had positive agglutination tests for brucella organisms.

Work is being done on improving methods of diagnosing brucellosis. Evaluations of animal inoculation, culture, and other diagnostic technics are being made in cooperation with the University and the Indiana State Health Department.

Brucellosis projects have been established in Wisconsin, Colorado and Utah with the assistance of local veterinarians.

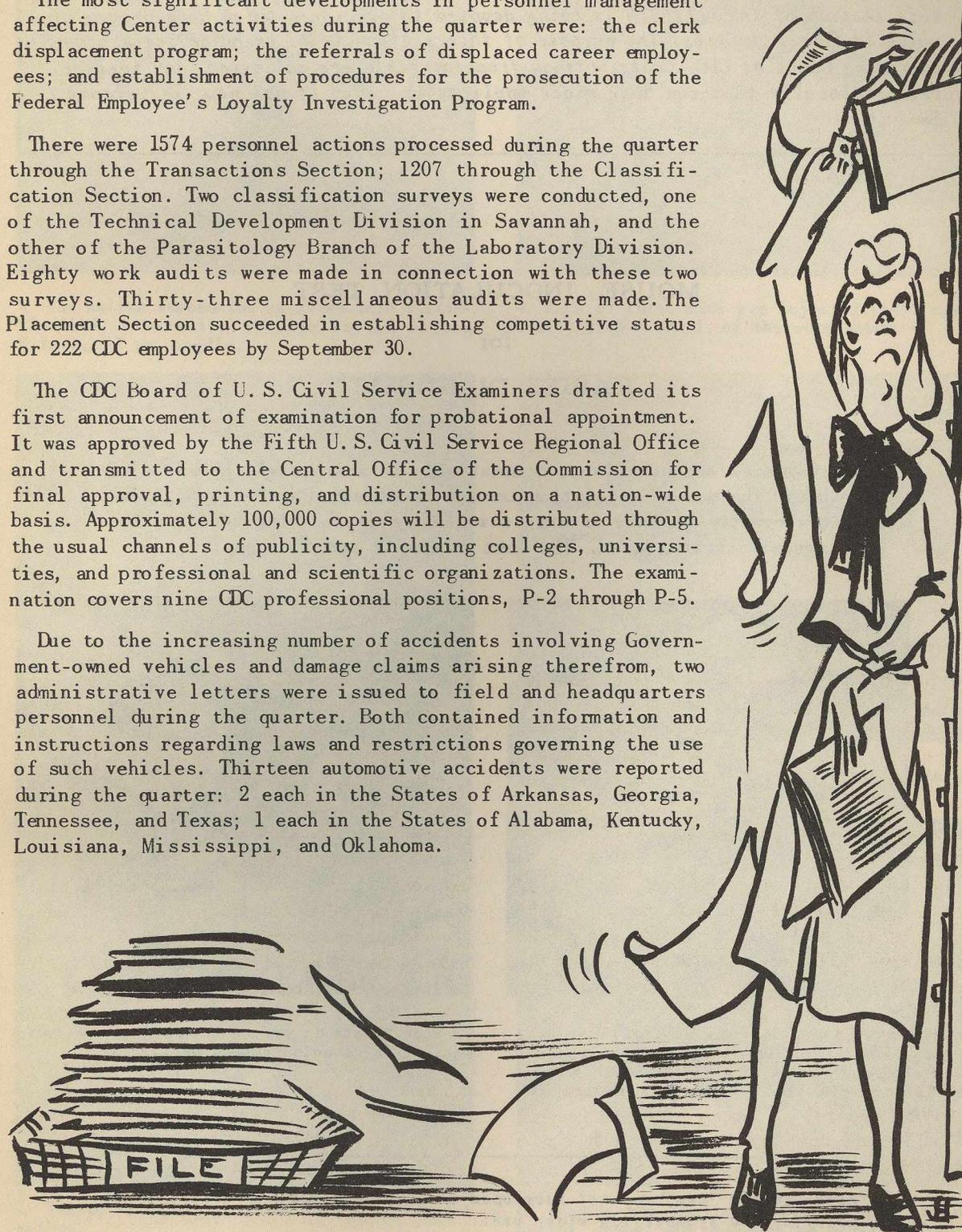
Administrative Division

The most significant developments in personnel management affecting Center activities during the quarter were: the clerk displacement program; the referrals of displaced career employees; and establishment of procedures for the prosecution of the Federal Employee's Loyalty Investigation Program.

There were 1574 personnel actions processed during the quarter through the Transactions Section; 1207 through the Classification Section. Two classification surveys were conducted, one of the Technical Development Division in Savannah, and the other of the Parasitology Branch of the Laboratory Division. Eighty work audits were made in connection with these two surveys. Thirty-three miscellaneous audits were made. The Placement Section succeeded in establishing competitive status for 222 CDC employees by September 30.

The CDC Board of U. S. Civil Service Examiners drafted its first announcement of examination for probational appointment. It was approved by the Fifth U. S. Civil Service Regional Office and transmitted to the Central Office of the Commission for final approval, printing, and distribution on a nation-wide basis. Approximately 100,000 copies will be distributed through the usual channels of publicity, including colleges, universities, and professional and scientific organizations. The examination covers nine CDC professional positions, P-2 through P-5.

Due to the increasing number of accidents involving Government-owned vehicles and damage claims arising therefrom, two administrative letters were issued to field and headquarters personnel during the quarter. Both contained information and instructions regarding laws and restrictions governing the use of such vehicles. Thirteen automotive accidents were reported during the quarter: 2 each in the States of Arkansas, Georgia, Tennessee, and Texas; 1 each in the States of Alabama, Kentucky, Louisiana, Mississippi, and Oklahoma.



IDEA EXCHANGE

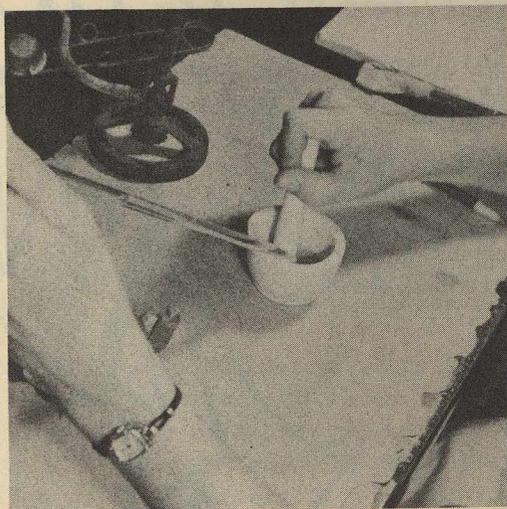
This section of the BULLETIN is being devoted to new ideas which have proved of value in CDC activities. The purpose of this section is to exchange ideas among operating units of CDC. Contributions from the field are solicited. Any idea developed locally that can have wider application, even if not new, is welcome. Send it in!

MOUSE INOCULATION TEST

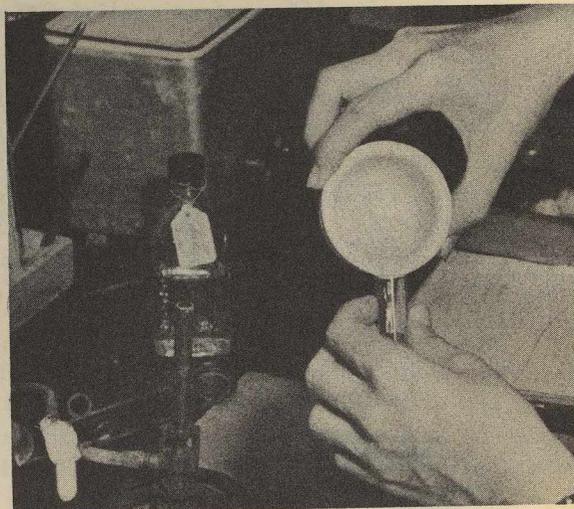
for

RABIES DIAGNOSIS ★

Negri bodies are not always demonstrable in animals which have died of rabies. The mouse inoculation test is recommended in Negri-negative brains where the history is suggestive of rabies or when confirmation of diagnosis is indicated. The test is simple and inexpensive.

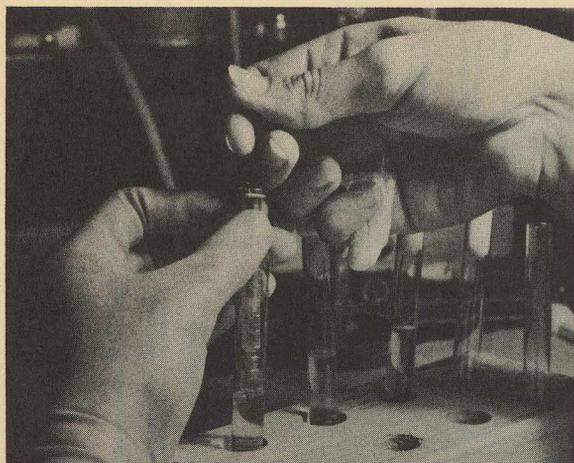


1. Brain tissue from Ammon's horn, cerebral cortex, and cerebellum of the suspected animal is pooled and ground in a mortar under aseptic conditions. Saline is added to make a 10% suspension.

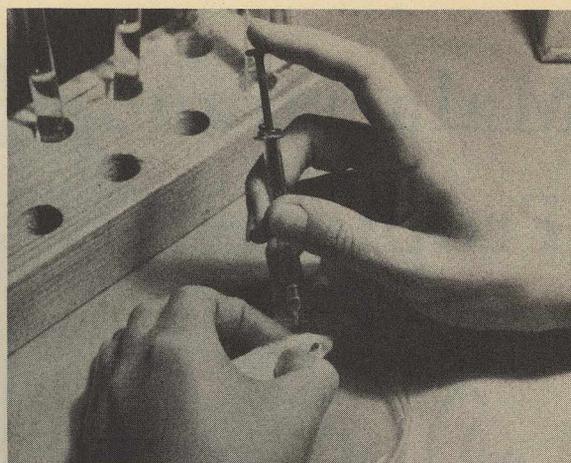


2. When tissue is ground thoroughly, the suspension is decanted into a sterile tube.

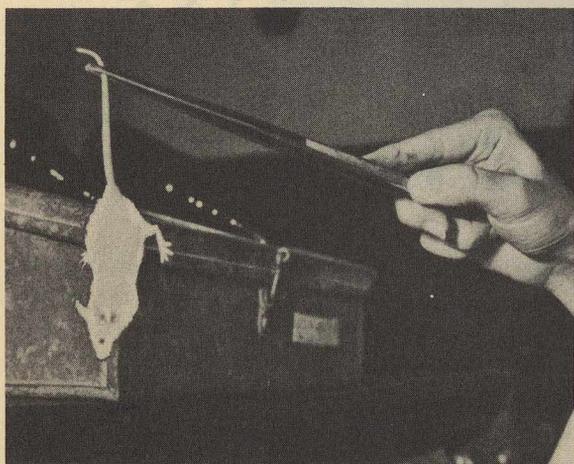
**Although not "new" and not developed in CDC, this test is described in an effort to promote its wider use.*



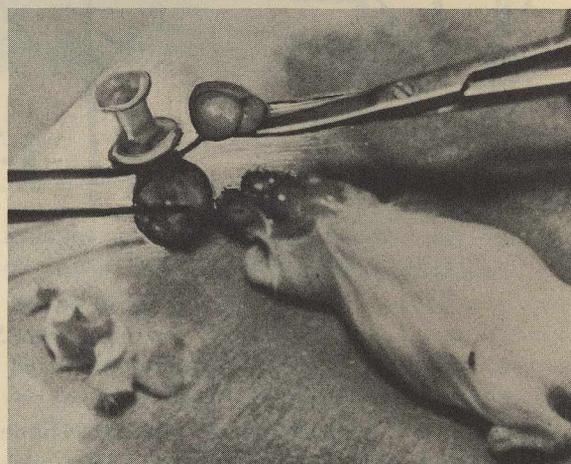
3. The saline suspension is drawn into a sterile $\frac{1}{4}$ ml. tuberculin syringe fitted with a $\frac{1}{4}$ inch, 27 ga. needle.



4. Each of three mice are injected intracerebrally with 0.03 ml. of the suspension.



5. Mice are kept under close observation for 14 days or until rabies symptoms develop.



6. Brains are removed from mice and lateral sections cut from the hemispheres.

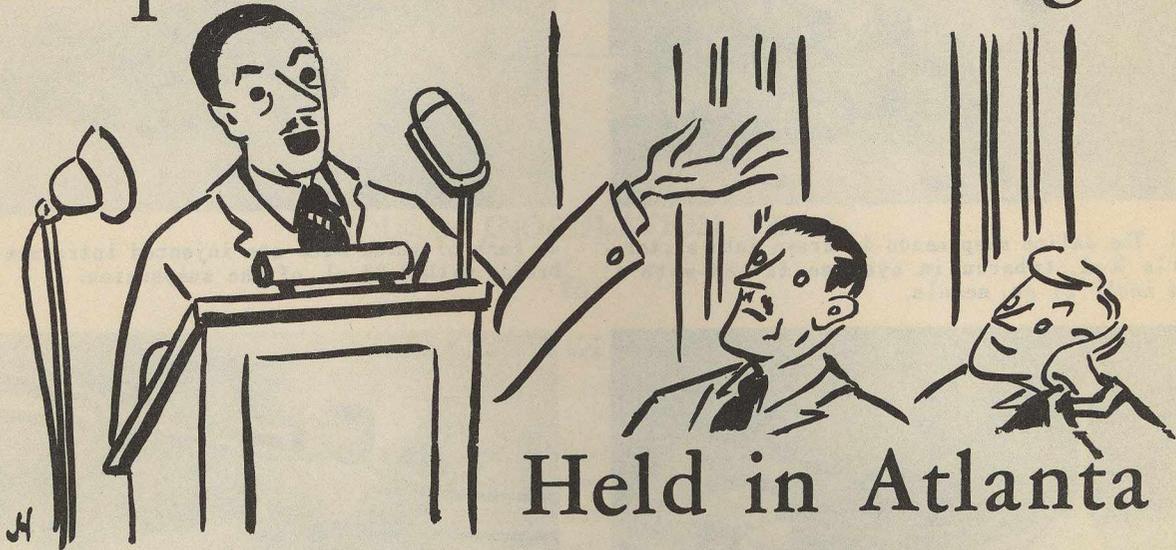


7. Tissue films are prepared by the impression method.



8. Slides are stained with Sellers' stain, washed, dried, and examined for Negri bodies.

Malaria and Tropical Medicine Meetings



Held in Atlanta

More than two hundred persons attended the joint meetings of the American Society of Tropical Medicine, the American Academy of Tropical Medicine, and the National Malaria Society in Atlanta during the week of December 1. Sixty-nine scientific papers were presented during the various sessions.

AMERICAN SOCIETY OF TROPICAL MEDICINE BAILEY K. ASHFORD AWARD

A feature of the American Society of Tropical Medicine program was the presentation of the Bailey K. Ashford Award to Dr. Jose Oliver-Gonzalez. Dr. Robert A. Lambert of the Rockefeller Foundation made the presentation. The award is an inscribed bronze medal and a check for \$1,000. This award is given each year by the Eli Lilly Research Laboratories, Indianapolis, Ind., to a young American citizen not over 35 years of age who has demonstrated outstanding research ability on tropical diseases. The selection of a recipient is made by a committee appointed by the American Society of Tropical Medicine.

Dr. Oliver-Gonzalez received his A. B. degree from the University of Puerto Rico, Rio Piedras, P. R. He entered the University of Chicago in 1938, receiving his M. S. degree there in 1940 and his Ph.D. degree in 1941. His academic connections have been with University of Puerto Rico, Columbia University, and currently, Western Reserve School of Medicine. He has performed research on malaria, schistosomiasis, filariasis, ascariasis, and parasite control. His primary interest is the immunology of worm infections, and in making the presentation Dr. Lambert stated that the award was made particularly for Dr. Oliver-Gonzalez' "basic studies in the immunology of helminth infections."

Following the presentation, Dr. Oliver-



Dr. Jose Oliver-Gonzalez, recipient of the Bailey K. Ashford Award for 1947.

Gonzalez gave a summary of his work on the antigenic analysis of the *Ascaris* worm. His paper reported evidence which indicated that immunity in trichinosis involves two antibodies, one effective against the adult worm and the other against the mature larvae in the tissues.

SYMPOSIUM ON VIRUS DISEASES IN THE TROPICS

The A.S.T.M. meeting on the afternoon of December 3rd was devoted to a symposium on Virus Diseases in the Tropics. The first paper on the program was the twelfth Charles Franklin Craig Lecture presented by Dr. William McDowell Hammon, Hooper Foundation, University of California School of Medicine, San Francisco. The subject was "Virus Encephalitides." Dr. Hammon reviewed arthropod-borne virus encephalitides before giving his "philosophical belief" that a stem virus for these diseases did exist at one time or does exist at the present time. In his stimulating paper, the University of California scientist said that the discovery of this common virus, "if indeed,

it does exist," would pave the way for the curing of all the virus encephalitides.

Dr. Albert B. Sabin delivered a paper, with Dr. R. W. Bloomberg as joint author, on "Dengue and Sandfly Fevers: Production of Poliomyelitis Diseases in Monkeys Inoculated with Mouse-Adapted Dengue Virus." Dr. Sabin gave highlights of work done on dengue and sandfly fevers since 1943 and told of recent research with dengue fever in normal monkeys, monkeys having had malaria, and monkeys with and without malaria that had undergone splenectomy.

Speaking of "Lymphogranuloma Inguinale," Dr. Geoffrey W. Rake discussed work done at the Squibb Institute in New Brunswick on mice and chicks in connection with the chemotherapy of the disease, Dr. Thomas F. Sellers reviewed his thirty years of experience with rabies, and Dr. William G. Workman lectured on "Smallpox: Certain Features of Prevention and Diagnosis."

Dr. Wilbur A. Sawyer presented a paper on "Recent Developments in Yellow Fever," Dr. Thomas Francis, Jr. lectured on "Influenza," and Dr. Kenneth F. Meyer reviewed clinical cases of psittacosis.

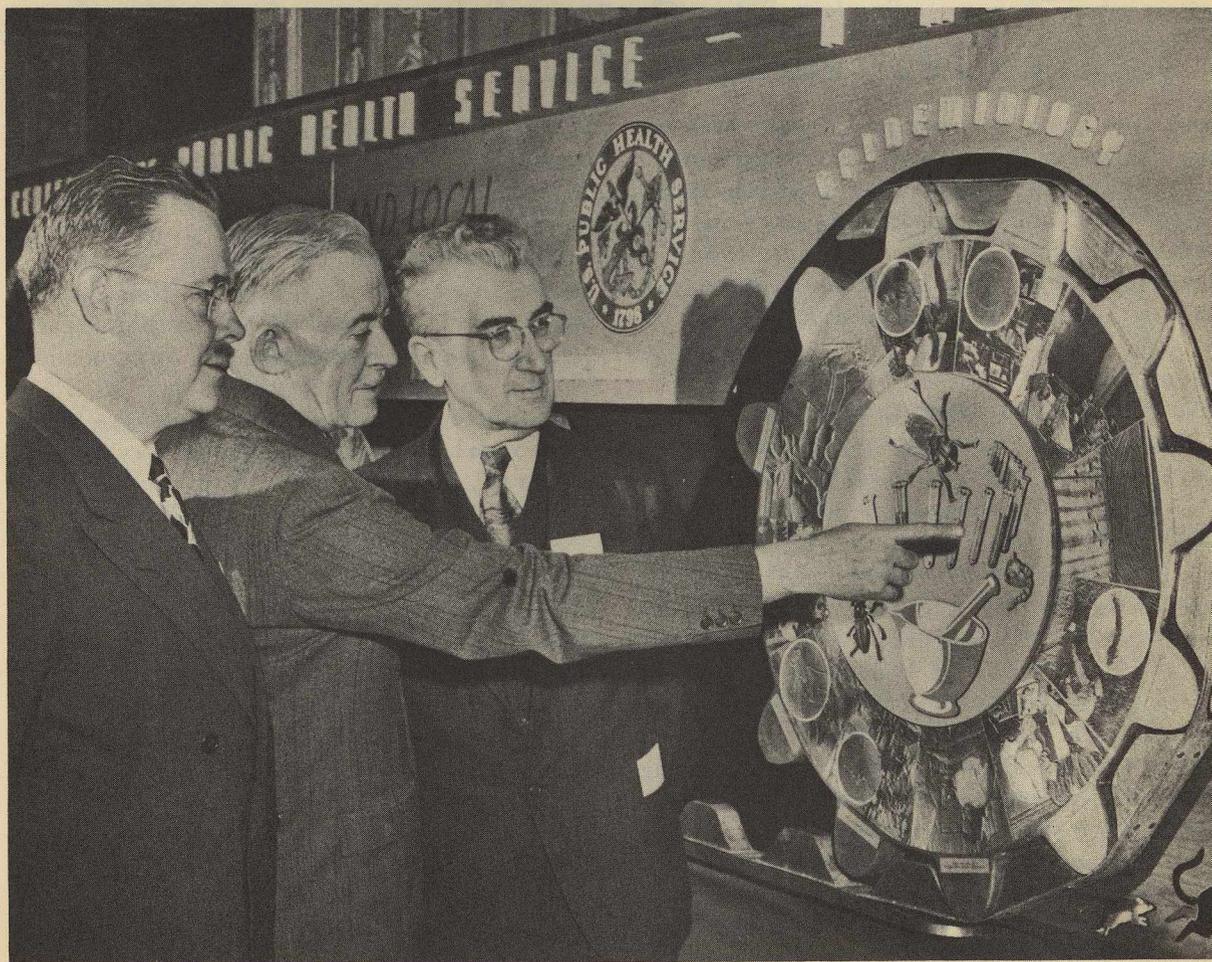
Dr. John R. Paul spoke on "Poliomyelitis" and called attention to the fact that poliomyelitis in the tropics, where it is usually endemic, has been largely overlooked. He suggested that more studies in the areas be conducted. Dr. Paul gave a historical review of the disease, pointing out that cases of poliomyelitis have been on a worldwide increase since 1890 and the turn of the century.

AMERICAN ACADEMY OF TROPICAL MEDICINE

The presidential address for the American Academy of Tropical Medicine, "United Attack on Tropical Research," was delivered at the

Academy's annual dinner Wednesday night by Dr. George K. Stroke, New York, N.Y. Featured on the program was the presentation of the Theobald Smith Gold Medal by Dr. Mark F. Boyd, Tallahassee, Fla., to Dr. Clay G. Huff, Bethesda, Md. After accepting the award, Dr. Huff presented a paper on "Exoerythrocytic Stages of Malarial Parasites." Dr. Huff, a native of Cory, Indiana, received the A. B. degree from Southwestern College in 1924 and ScD from Johns Hopkins in 1927. While at Hopkins, Dr. Huff was assistant in medical entomology. After graduation, teaching positions were held at Harvard

Among prominent malariologists attending the meetings were (left to right) Dr. Justin M. Andrews, CDC, Dr. James S. Simmons, Dean of Harvard School of Public Health, and Dr. Mark F. Boyd, International Health Division, Rockefeller Foundation.





Dr. Martin D. Young (left), Secretary, and Mr. Mark D. Hollis, President of the National Malaria Society.

and the University of Chicago. Dr. Huff's present position is with the Naval Research Institute, Bethesda, Md. Dr. Huff's researches have included a variety of subjects among which were immunity against parasites, malarias of lower animals, arthropod transmission of disease, and genetics of pathogenic organisms.

The Theobald Smith Award was established in 1935 as the Theobald Smith Medal of the American Academy of Tropical Medicine by George Washington University. The medal is awarded, on alternate years, "in recognition of outstanding contributions to tropical medicine". In addition to Dr. Huff, the following persons have received this award: Dr. Marshall A. Barber, Col. Richard P. Strong, Admiral Ed-

ward R. Still, Col. Charles F. Craig, and Dr. Charles Morley Wenyon.

NATIONAL MALARIA SOCIETY

In three scientific sessions on malaria, papers were presented on a variety of pertinent subjects. The first meeting was devoted largely to control methods and engineering aspects of malariology. A paper was also presented on field training for personnel from foreign countries. The session on December 3rd was concerned with biologic work. Work was reported on entomology, immunology, therapeutics, and laboratory technic. At the final meeting papers were read on therapy, diagnosis, biologic problems and epidemiology of malaria.

PICTORIAL REVIEW — CDC FILM STRIP

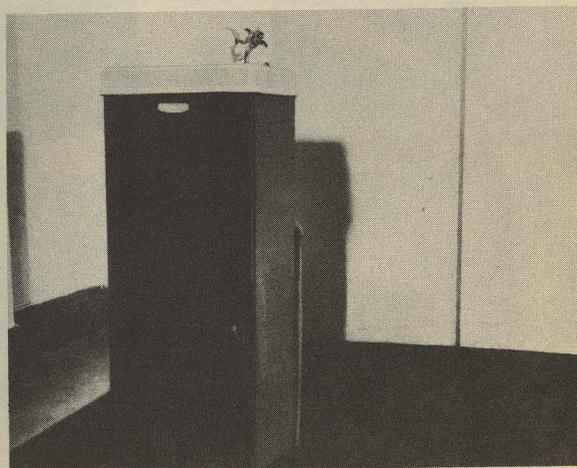
"SANITARY DESIGN IN DRINKING FOUNTAINS"

AUDIENCE: *Sanitarians, Sanitary Engineers, Schools of Public Health, Health Educators, etc.*

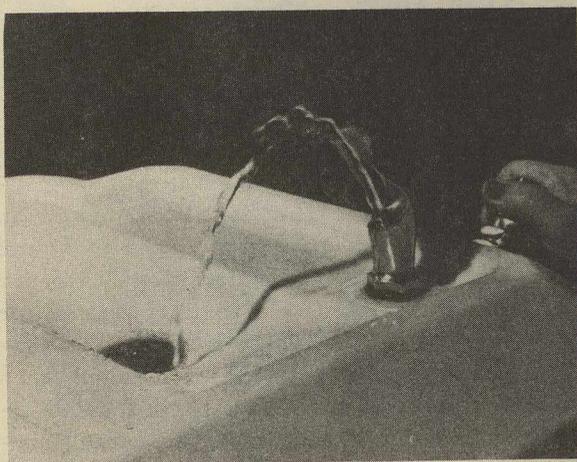
Improperly designed drinking fountains may transmit colds, mumps, measles, influenza, tuberculosis, and other diseases. Study this film strip and then look around your community to see for yourself if your drinking fountains are safe from the public health viewpoint.



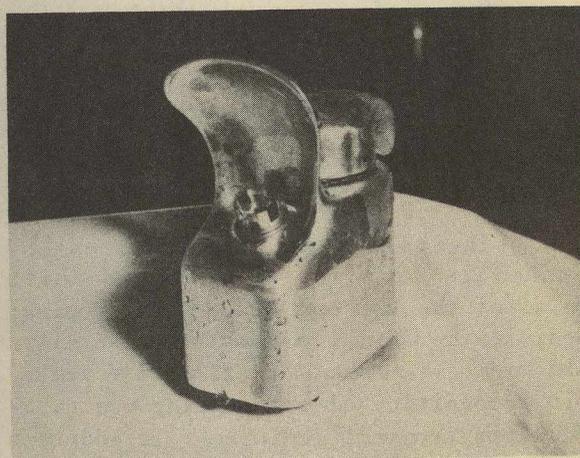
(1) This improperly designed drinking fountain may transmit disease.



(2) This type of fountain is of satisfactory sanitary design, constructed to prevent transmission of disease.



(3) The water jet should flow at an angle from the vertical so as not to fall back upon the nozzle.



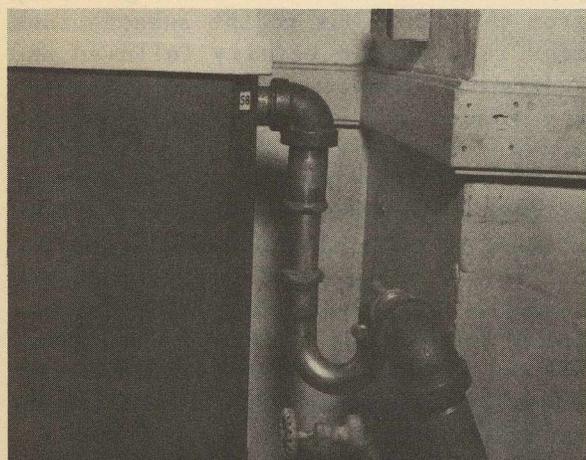
(4) The outer nozzle should be vented so that a finger placed on the nozzle will not contaminate the inner opening.



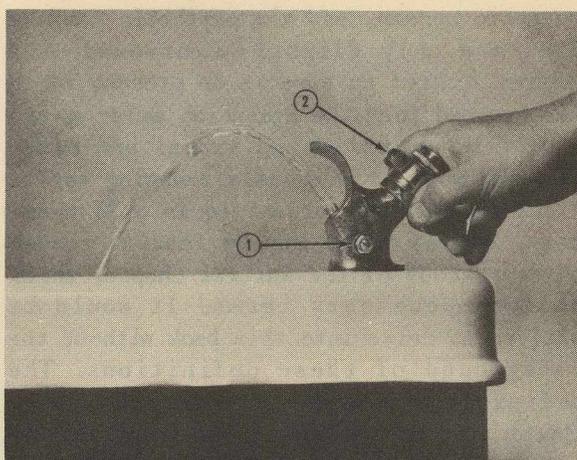
(5) The nozzle should be above the edge of the bowl so that dirty water in a flooded bowl will not cover the nozzle.



(6) The nozzle should be protected by a guard to prevent dripping water and the user's lips from reaching it.



(7) The drain must be trapped if connected to a waste pipe. Trapped drains prevent sewer gas from coming out of the waste pipe.



(8) The fountain should have a pressure control adjustment (1) and a water cut-off pedal, button, or handle (2). The pressure control adjustment is necessary to prevent the jet from going too high and far, or so low that lips must touch the nozzle.



(9) LEFT: Persons of any height should be able to reach the jet. Steps should be provided for children.

Production Number: 5-081
35 mm, Black and White, Silent Film Strip
Running Time: Indefinite (no narrative)
52 Frames

To obtain this film strip, address requests to:

Production Division
Utilization Branch
Communicable Disease Center
605 Volunteer Building
Atlanta 3, Georgia



MENTAL MISCHIEF AND EMOTIONAL CONFLICTS
 by William S. Sadler, M. D. C. V. Mosley
 Company, 1947 St. Louis, pp. 396.

As the title implies, this book portrays the fundamental trends of the mental aberrations found principally in the neurotic person, and the psychotic tendencies are only slightly mentioned. The author's chief purpose is to present in an easily read form the causation and symptoms of the maladjusted individual and offer him advice in this swiftly changing world.

The material is organized into 34 chapters, any of which may be read at random after a study of the initial chapter which defines necessary terms. It would be useless to delve into this book without the background of these definitions. The definitions are quite comprehensible, though some of the author's assumptions and explanations are distinctly broad. Because of the completeness of each chapter, the consecutive reader finds profound repetitious verbosity beyond that necessary to produce a fixed mental impression. The style in which the subject is presented varies from favorable newspaper jargon to the more serious scientific attitude of the consultation room. Thus, the book serves as a ready source of information to the public and to the practitioner.

As to the different schools of psychological and psychiatric peers, Dr. Sadler seems partial to Jung; at times takes Freud to task; and only occasionally mentions Adler and Meyer. To these various schools of thought he adds humor as his own contribution. It is indeed a pleasure to have the initiation of a sense of humor as one of

the master motives of the human personality.

So familiar is Dr. Sadler with his psychiatric material that he swings nimbly from the conscious to the subconscious mind in a manner readily followed and understood. Before completing this book any reader will be well aware of the mischief that this tangible but invisible mental repository can cause. A great deal of time and thought is placed on the discussion of cultists and mediums, and the ability of these people to attract the neurotic individual. Why the medium has fooled himself into seeing spirits through his own unstable personality and has made his gullible audience believe, is thoroughly explained.

A dissertation on the effects and need of prayer when practiced in a constructive manner is handled skillfully in one of the concluding chapters of the book. It is a little startling to come abruptly upon this opinion in view of the other remarks found at random throughout the book. Issue could be taken with the hair-splitting rules of diagnoses that were used, rules which might be slightly confusing to the reader seeking help. Despite this, such a reader is rewarded with ample, sound, and helpful advice.

In conclusion, the book offers enjoyable reading to some; for others, if they care to heed it, there is a wealth of much-needed aid and assistance.

Caroline Kreiss Pratt, M. D.

